

3A.2 Optimization of Infill Drilling in Naturally-Fractured Tight-Gas Reservoirs in the San Juan Basin*

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Abstract

A major goal of industry and the DOE fossil energy program is to increase U.S. gas reserves in tight-gas reservoirs. Production from tight-gas sandstone reservoirs of the Mesaverde and Dakota formations in the San Juan Basin is highly dependent on natural fractures. Fractures not only enhance the overall permeability of these reservoirs, they also create significant permeability anisotropy. Permeability anisotropy causes the drainage area around the wells to be elliptical. Elongated drainage creates more production interference and drainage overlap between adjacent wells and increases the potential for leaving large sections of the reservoir undrained. Reservoir characterization and simulation studies are being conducted in the San Juan basin to (1) define the elliptical drainage area and recoverable gas for existing wells, (2) determine the optimal location and number of new infill wells to maximize economic recovery, and (3) forecast the increase in total cumulative gas production from infill drilling at different locations in the basin. This study provides producers the necessary information required to develop optimal infill drilling strategies for recovery of significant additional gas from tight-gas reservoirs. A preliminary estimate of additional recoverable gas from optimal infill drilling of Mesaverde Formation in the San Juan Basin is 7.8 TCF.